International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 11s, 2025
https://theaspd.com/index.php

Sustainability And Skill Alignment In Civil Engineering: Employment Outcomes Of Bsce Graduates In Mountain Province State Polytechnic College

Rollie C. Mejia, Assistant Professor
Mountain Province State University, Tadian Campus

Abstract
This study investigates the professional trajectories of Bachelor of Science in Civil Engineering (BSCE) graduates from Mountain Province State Polytechnic College (MPSPC) - Tadian Campus, spanning the academic years 2010-2019. The research explores the diverse motivations for pursuing a BSCE degree, including personal passion, social influences, and economic factors. The study highlights that many graduates are driven by a deep interest in civil engineering, with course accessibility, family influence, and career prospects also playing crucial roles in their decision-making. The employment status of graduates reveals that most are employed, with a substantial portion in regular or permanent positions, while others hold contractual roles providing varied project experience. Unemployment is attributed to limited job opportunities, lack of experience, and personal decisions like further education or family commitments. Graduates' initial job roles span civil engineering and non-engineering fields, reflecting the versatility of their skills. Competencies gained during College, such as problem-solving, critical thinking, and IT skills, are highly relevant in the professional sphere. The study also finds that demographic factors like Age and civil status correlate with employment status, while gender does not significantly influence employment outcomes despite existing imbalances. Recommendations include fostering partnerships with local agencies and firms, enhancing networking opportunities, and integrating sustainability principles into the curriculum. Promoting gender diversity and reviewing the BSCE program curriculum are also suggested to align with industry needs. A comprehensive methodology involving data collection through the Graduate Tracer Survey (GTS) and a rigorous demographic and employment data analysis supports these findings. The study underscores the need for targeted interventions to improve graduate employability and career development.
Keywords: *Graduate Competencies, Curriculum Alignment, Employment Outcomes*

INTRODUCTION

Understanding the trajectories and achievements of graduates is essential for higher education institutions to assess their program effectiveness and relevance. For Mountain Province State Polytechnic College (MPSPC)—the only state-run higher education institution in the province—monitoring graduate outcomes is central to its mission of delivering quality education that equips students for professional success and meaningful community contribution. Since its establishment in 1992, MPSPC has offered a range of academic programs, with Civil Engineering at the Tadian Campus emerging as a core offering that continues to evolve in response to industry demands.To ensure that the Civil Engineering program meets professional standards and prepares students adequately, conducting a tracer study of its graduates is vital. Tracer studies offer insights into employment outcomes, the alignment between academic preparation and job requirements, and the effectiveness of institutional support in developing competencies. Several studies reinforce the importance of such efforts.For example, Hazaymeh and Dela Peña (2017) found that while graduates from La Salle University's Engineering programs were generally employable within six months, there was a pressing need to revise curricula and enhance graduate attributes. Similarly, Sicadsicad et al. (2022) reported that most University of Cebu graduates found employment within one to six months but recommended updates in teaching approaches and curriculum design to improve industry readiness.Bahian (2020) highlighted the need for curriculum alignment with licensure exam preparation and employment outcomes in Eastern Visayas State University, where most graduates were employed in government sectors and valued communication skills acquired during their studies. Studies by Wulandari et al. (2022) and Pontillas (2018) emphasized the importance of both soft and hard skills, such as ethics, internet literacy,

and technical competencies, in enhancing employability. They also pointed out the need for better exposure to modern tools and managerial training. Riyanti, Reski, and Arif (2022) as well as Odede et al. (2021) affirmed the value of higher education in equipping graduates with competencies such as teamwork, communication, and professional relevance. Likewise, Sueno and Balala (2022) stressed the helpfulness of critical thinking, interpersonal communication, and work-related values in graduates' careers, recommending stronger pre-employment support and faculty training. These studies collectively highlight common themes: employability within months after graduation, the significance of aligning curricula with industry needs, and the value of soft skills. As Guetterman (2019) points out, evaluating such outcomes requires a structured analytical approach using descriptive statistics to effectively interpret data on graduate performance, competencies, and professional transitions. Given this context, conducting a tracer study for the Bachelor of Science in Civil Engineering graduates of MPSPC–Tadian Campus is both timely and essential. The results will inform curriculum enhancement, skills development strategies, and program adjustments that align with licensure, employment, and long-term career success in the engineering field.

This study traced the progress of the Bachelor of Science in Civil Engineering graduates of MPSPC-Tadian Campus from Academic Years 2010-2018.

It specifically aimed to answer the following:

What are the reasons for taking the BSCE Degree

What is the status of employment of the Bachelor of Science in Civil Engineering (BSCE) graduates and the reasons for being not employed?

What is the first job description of the BSCE Graduates in terms of:

Relation of their first job in their course

Tools in finding their first job

Interval of time landing in their first job after College

What competencies learned in College are useful to the first/present job of the respondents?

Is there a relationship between the profile of the respondents and their employment status in terms of:

Age,Civil Status, Sex

METHODOLOGY

Research Design

This study uses a retrospective cohort design to examine the educational and professional experiences of 74 BS Civil Engineering graduates from MPSPC – Tadian Campus (2010–2019). Data were collected via the CHED Graduate Tracer Survey, capturing personal, educational, and employment information. Respondents were identified through official records, and follow-ups ensured higher response rates. The collected data were cleaned, coded, and analyzed using descriptive statistics and correlation analysis to explore relationships between graduate profiles and employment outcomes.

Population selection/sampling methodology

Population selection involved total enumeration of all 184 BSCE graduates from MPSPC – Tadian Campus relevant to the study. Data collection focused on 74 accessible graduates through CHED's Graduate Tracer Survey, email, social media, and in-person interviews with graduates or their families. Respondents' demographics showed the largest age group was 31–32 years (33.78%), with 1.35% aged 25 or below. Most were married (59.5%), followed by single (36.5%), separated (2.7%), and single parents (1.4%). Gender distribution was 62.2% male and 37.8% female, reflecting diverse backgrounds relevant to the study.

Data gathering tool

The Graduate Tracer Survey (GTS) is the main data collection tool for this study. It gathers comprehensive information about graduates' personal details (name, contact, age, gender, civil status), educational background (degree, specialization, professional skills, exams passed), and motivations for pursuing BSCE and advanced studies. The survey also collects employment information, including current status, reasons for unemployment if any, job details (level, employer type, location), job satisfaction, relevance of their first job to their education, career changes, and time taken to secure their

first job.Graduates reflect on how well the college curriculum prepared them and identify key competencies gained. The survey ends by inviting respondents to refer other MPSPC-Tadian graduates to participate, broadening the study's reach.

Data gathering Procedure

The procedure starts by identifying potential respondents using official records from the Registrar's Office to compile a list of eligible graduates. The Commission on Higher Education (CHED)-designed Graduate Tracer Survey (GTS) is then distributed to these graduates.

Respondents are encouraged to provide accurate and detailed information in the survey, covering personal, educational, employment, and professional details. They may choose their preferred response method for convenience. Follow-ups are conducted as needed to boost participation and resolve queries. Collected data is carefully reviewed for accuracy and relevance, supplemented by official records from the Registrar's Office. The combined data is then organized, tabulated, and analyzed using statistical methods to generate meaningful insights into the educational and career paths of BSCE graduates from MPSPC-Tadian Campus.

Data analysis/treatment of Data

After collecting data through the revised CHED-designed Graduate Tracer Survey (GTS), the information undergoes thorough processing to ensure its reliability and relevance. Initial steps include meticulous data cleaning to correct errors, handle missing values, and standardize responses, thereby enhancing data integrity and validity. Next, the survey responses are carefully coded and organized according to predefined criteria aligned with the study objectives. This systematic categorization enables effective quantitative analysis. Descriptive statistics—such as frequency counts, percentages, and measures of central tendency (mean, median, mode)—are used to summarize key data points, including demographics, educational backgrounds, and employment statuses of the BSCE graduates.

Furthermore, correlation analysis is conducted to examine relationships between graduates' profiles (e.g., age, gender, academic performance) and their employment outcomes. This analysis provides insights into how these factors may influence employment status and trends.

RESULTS

This study explores the educational and professional paths of BS Civil Engineering (BSCE) graduates from MPSPC-Tadian Campus (2010–2019). It investigates graduates' demographics, employment status, initial job roles, relevance of college skills to their careers, and links between learned competencies and employment.

Reasons for taking the course or pursuing BSCE			
Reasons	F	%	RANK
Good Grades in the Subject Area	3	2.03%	12
Good Grades in High School	8	5.41%	8.5
influence of Parents or Relatives	12	8.11%	4
Peer Influence	9	6.08%	7
Inspired by a Role Model	11	7.43%	5.5
Strong Interest for the Profession	29	19.59%	1
Prospect for Immediate Employment	8	5.41%	8.5
Status or Prestige of the Profession	5	3.38%	11
Availability of Course Offering In Chosen Institution	25	16.89%	2
Prospect of Career Advancement	6	4.05%	10
Affordability for the Family	18	12.16%	3
Prospect of Attractive Compensation	2	1.35%	13
No particular Choice or No better idea	11	7.43%	5.5
other, Please Specify	1	0.68%	14

Table 1. Reasons For Taking The Course or Pursuing BSCE (Undergraduate)

The findings indicate that a strong personal interest in the profession is the leading motivator among respondents, highlighting that intrinsic motivation plays a crucial role in shaping educational paths. Additionally, the availability of the course at MPSPC (16.89%) and financial considerations (12.16%) suggest that institutional accessibility and economic feasibility significantly influence students' decisions. Parental influence, peer input, and inspiration from role models further reflect the impact of one's immediate social environment. The presence of respondents who entered the course without a clear preference (7.43%) signals the need for more robust career guidance at the pre-college level.

These insights help MPSPC better understand student motivations and can guide improvements in course promotion, financial assistance programs, and career orientation efforts.

Employment Status		
Are you Currently Employed?	Frequency	Percent
No	16	21.6
Yes	58	78.4
Total	74	100

Table 2. Employment Status of the Respondents

Table 2 shows that 78.4% of BSCE graduates from MPSPC–Tadian Campus are employed, indicating strong workforce integration. Meanwhile, 21.6% remain unemployed, suggesting the need for support in job placement or skills alignment. This employment rate reflects positively on the program's relevance. Similarly, Bual (2024) found a 93.38% employment rate among manufacturing engineering graduates, reinforcing the competitiveness of engineering programs in the job market.

Reasons for not being employed		
Reasons	Frequency	Percent
Advance or Further Study	1	6.67%
Family Concern and Decided Not	1	6.67%
Health-related Reasons	1	6.67%
Lack of Work Experience	2	13.33%
No Job Opportunity	3	20.00%
Did not look for a job	5	33.33%
other Reasons	2	13.33%

Table 3. Reasons for not being Employed

Table 3 presents the reasons why some BSCE graduates from MPSPC–Tadian Campus remain unemployed. The most common reason, cited by 33.33% of respondents, is that they "did not look for a job," suggesting a passive approach to employment. This is followed by "no job opportunity" (20%), pointing to challenges in the job market. Other contributing factors include lack of work experience and various personal considerations such as health issues, family concerns, and a decision to pursue further studies—each cited by a smaller proportion of respondents.

These findings align with Bual's (2024) study on manufacturing engineering graduates, where half of the unemployed respondents had not sought jobs, and others cited similar issues such as job availability and family responsibilities. The data underscores that both internal factors (like personal choice or health) and external constraints (such as job market saturation) influence employment status among engineering graduates. Addressing these barriers may require enhanced career guidance, internships, and stronger linkages with industry to support graduates' transition into the workforce.

Present Employment Status		
Status	Frequency	Percent
Regular or Permanent	26	37.68%
Temporary	2	2.90%

Casual	3	4.35%
Contractual	23	33.33%
Self-employed	7	10.14%
Unemployed	8	11.59%

Table 4. Present Employment Status of the Respondents

Table 4 shows the employment status and occupations of BSCE graduates from MPSPC–Tadian Campus. A significant portion (37.68%) hold regular or permanent positions, reflecting stable employment, while 33.33% are in contractual roles, suggesting that many are gaining industry experience through project-based or fixed-term engagements. Meanwhile, 10.14% are self-employed, indicating entrepreneurial efforts within the civil engineering field. This mix highlights the varied nature of career paths pursued by the graduates, ranging from government and private sector roles to personal business ventures.

Occupations include Civil Engineer, Project Engineer, Technical Facilitator, and Engineering Assistant, with others working outside the field in roles like Jail Officer or Domestic Helper. These varied outcomes point to the broad applicability of civil engineering training, but also to job-market challenges. Similar findings were noted by Bansiong (2020), where a majority of graduates held non-permanent positions. The MPSPC data mirrors this trend, suggesting the need for institutional strategies to support graduates in securing stable, long-term employment opportunities.

First Job		
Responses	Frequency	Percentage
YES	23	31.10%
NO	51	68.90%

Table 5. First Job after College

Table 5 reveals that only 31.10% of respondents reported their current job as their first after college, while the majority (68.90%) indicated otherwise. This suggests that many BSCE graduates underwent job transitions or periods of unemployment before securing their current roles. The data highlights the dynamic nature of civil engineering career paths, where graduates often explore multiple opportunities before finding stable or more suitable employment.

Reasons for Staying in the Job		
Responses	Frequency	Rank
Salaries and Benefits	19	2
Career Challenge	20	1
Related to Special Skills	17	3
Related to Course or Program Study	12	4
Proximity to Residence	9	5
Peer Influence	1	6.5
Family Influence	1	6.5
Others	0	8

Table 6. Reason for Staying in the Job

Relation of First Job to Their Course		
Relation	Frequency	Percentage
YES	65	87.80%
NO	9	12.20%

Table 7. Relation of First Job to BSCE

Table 6 highlights key factors influencing BSCE graduates' decisions to remain in their current jobs. The most cited reason is "Career Challenge" (20 respondents), followed closely by "Salaries and Benefits" (19), indicating the importance of professional growth and financial stability in job retention. Other factors include the application of "Special Skills" (17) and relevance to their academic background (12), showing that alignment between education and job roles contributes to satisfaction. Additional reasons such as proximity to residence, peer influence, and family considerations were also noted, reflecting a blend of personal and professional motivations in retention decisions.

Table 7 reveals that 87.80% of the respondents' first jobs were related to their BSCE degree, indicating a strong connection between their academic preparation and initial employment. However, 12.20% reported taking jobs unrelated to their course, suggesting that while most graduates find relevant opportunities, a portion may face mismatches or limited options initially. This underscores the importance of curriculum relevance and support systems that facilitate smooth transitions from education to employment in civil engineering.

Reasons for Accepting the Job		
Responses	Frequency	Rank
Salaries and Benefits	10	1
Career Challenge	9	2.5
Related to Special Skills	9	2.5
Proximity to Residence	6	4
Others	0	5

Table 8. Reasons for Accepting the Job not related to their course of study

Table 8 reveals that for BSCE graduates whose first job was not directly related to their course, the top reason for accepting their current position is "Salaries and Benefits" (10 respondents), emphasizing the weight of financial incentives in job decisions. "Career Challenge" and "Related to Special Skills" follow closely (9 respondents each), indicating that opportunities for growth and the chance to apply specialized skills are also key motivators. Additionally, "Proximity to Residence" (6 respondents) highlights the role of convenience and work-life balance in employment choices. These findings reflect a mix of economic, professional, and practical factors shaping career paths, even when jobs fall outside the graduates' academic specialization.

Tools in Finding the First Job		
Responses	Frequency	Percentage
Response to an advertisement	3	4.05%
As walk-in applicant	27	36.49%
Recommended by someone	28	37.84%
Information from Friends	12	16.22%
Arranged by school's Job Placement Officer	0	0.00%
Family Business	4	5.41%

Table 9. Tools in Finding the First Job

Table 9 shows that the most common method BSCE graduates used to secure their first job was through personal referrals, with 37.84% being "recommended by someone," underscoring the value of networking in job acquisition. Walk-in applications closely follow at 36.49%, reflecting the proactive efforts of graduates. Additionally, 16.22% relied on information from friends, reinforcing the importance of informal peer networks. Less common approaches included responding to advertisements (4.05%) and working in family businesses (5.41%). Notably, none of the respondents attributed their employment to assistance from a Job Placement Officer, highlighting a gap in institutional job placement support.

Interval of time landing in their first job after College		
Responses	Frequency	Percentage
Less than a month	42	56.76%
1 to 6 Months	18	24.32%
7 to 11 Months	2	2.70%
1 Year to less than 2 Years	5	6.76%
2 years to less than 3 Years	3	4.05%
3 years to less than 4 Years	3	4.05%
Job fair or Public Employment Service Office (PESO)	0	0.00%
Others	1	1.35%

Table 10. The interval of time landing in their first job after College

Table 10 reveals that the majority of BSCE graduates (56.76%) secured their first job within one month after graduation, indicating a relatively quick transition to employment. Another 24.32% found jobs within six months, showing that most graduates actively pursued employment soon after College. However, a smaller portion of respondents experienced longer job searches, with 6.76% taking one to two years and around 8% taking between two to four years to find their first job. These findings suggest variability in job acquisition time, likely influenced by individual circumstances, job market conditions, or further education pursuits.

Comparing these results with Bansiong (2020), where 83% of Bachelor of Secondary Education graduates found employment within a year, highlights a similarly proactive job search attitude among civil engineering graduates. Notably, none of the respondents reported securing their first job through job fairs or Public Employment Service Offices (PESO), suggesting a preference for alternative job-seeking strategies such as referrals, direct applications, or informal networks. This underscores the importance of personal connections and proactive efforts in early career employment.

Competencies Learned in College		
Responses	Frequency	Rank
Communication Skills	8	4
Human Relation Skills	6	5
Entrepreneurial Skills	1	6
Information Technology Skills	10	3
Problem-solving skills	20	1
Critical Thinking Skills	18	2
Other Skills	0	7

Table 11. Competencies Learned in College

Table 11 highlights the key competencies gained by BSCE graduates during college, particularly those whose curriculum was relevant to their current or first job. Among 67 respondents, problem-solving skills topped the list, cited by 20 individuals, underscoring its critical role in addressing complex engineering challenges. Critical thinking skills followed closely, identified by 18 respondents, reflecting the value of analytical reasoning and sound decision-making in ensuring successful project execution. Information technology skills, mentioned by ten graduates, demonstrate the growing importance of digital literacy in the civil engineering field, where software tools and data analysis are now integral to professional practice.

Other notable competencies include communication and human relations skills, identified by eight and six respondents, respectively. These soft skills are essential for effective teamwork, client interaction, and coordination across various stakeholders. One respondent also acknowledged entrepreneurial skills, indicating the relevance of innovation and adaptability in an evolving job market. Overall, the responses show that the BSCE curriculum at MPSPC-Tadian Campus provides graduates with a well-rounded skill set—combining technical, analytical, and interpersonal abilities—that prepares them for diverse roles and challenges in the engineering profession.

Employment Status vs. Profile		
Profile	r-value	Remarks
Age	0.290	Low Correlation
Civil Status	0.267	Low Correlation
Sex	0.004	No Correlation

Table 12. Relationship Between the Profile of the Respondents to their Employment Status

Table 12 examines the correlation between demographic factors and employment status among BSCE graduates from MPSPC-Tadian Campus. The results indicate a moderate positive correlation between age and employment status (r = 0.290), suggesting that older graduates are more likely to be employed. This trend may reflect the advantages of work experience, maturity, and expanded professional networks, making older individuals more competitive in the job market. Similarly, civil status shows a moderate correlation (r = 0.267), with married individuals slightly more likely to be employed—possibly due to greater financial responsibilities and the need for job stability.

Interestingly, the data show no significant relationship between sex and employment status (r = 0.004), indicating that gender does not appear to influence job acquisition among the respondents, despite the common male dominance in the engineering field. This finding suggests a more balanced employment landscape for BSCE graduates at MPSPC-Tadian Campus. Overall, while age and civil status may influence employment outcomes to some extent, the results emphasize the importance of focusing on broader support strategies for all graduates, regardless of demographic background.

In contrast, the analysis shows no significant correlation between sex and employment status, with a correlation coefficient close to zero (r = 0.004). This result is unexpected given the broader gender disparities typically observed in engineering, where men often outnumber women. Despite the higher percentage of male graduates in this study, gender does not appear to be a significant factor in determining employment status among the BSCE graduates from MPSPC-Tadian Campus. These findings suggest that tailored support may be necessary to assist all graduates in their professional transitions, regardless of demographic characteristics.

CONCLUSION

The tracer study of Bachelor of Science in Civil Engineering (BSCE) graduates from MPSPC–Tadian Campus (2010–2019) reveals varied motivations for pursuing the degree, such as personal passion, family influence, affordability, and career opportunities. Most graduates are employed, many in permanent or contractual roles, while unemployment is often due to limited experience, job availability, or personal decisions. Graduates have taken on diverse roles—not only as engineers but also in non-engineering positions—demonstrating the flexibility and wide applicability of their civil engineering training. Core competencies acquired during college—such as problem-solving, critical thinking, and information technology—proved highly relevant in the workplace. Communication and interpersonal skills were also emphasized, reflecting the interdisciplinary demands of the civil engineering field. The study found moderate correlations between employment and demographic factors such as age and civil status, with older and married graduates more likely to be employed. However, gender showed no significant effect on employment outcomes, suggesting a more balanced labor market despite a male-dominated field. To address employment gaps and better support graduates, the study recommends strengthening linkages with agencies and private firms like DPWH, DILG, and construction companies. These partnerships could lead to more tailored career programs, practical training, and exposure to industry trends. Alumni networks, industry forums, and mentorship opportunities should be expanded to build stronger professional connections. Promoting continuous learning through certifications and skills training is vital for graduate competitiveness, particularly in adapting to new technologies and sustainability requirements. Lastly, the study highlights the need for curriculum review based on industry feedback to ensure graduates remain workforce-ready. Interventions like enhanced academic advising, career services, and gender inclusivity programs will further enrich student and graduate experiences. Encouraging pathways beyond engineering, such as project management and entrepreneurship, will also broaden career prospects. Continuous monitoring through follow-up studies

and collaboration with research institutions and industry stakeholders is essential to adapt programs effectively and ensure long-term success for BSCE graduates.

REFERENCES

1. Bahian, M. E. V., Bertulfo, E. B., Pulma, D. B., & Navarro, R. G. (2020). A tracer study of Eastern Visayas State University-Ormoc Campus graduates. Aloha International Journal of Multidisciplinary Advancement, 2(8), 175.
2. Bansiong, A. J., Cuevas, J. P., Alawas, D. E., Bokilis, A. B., Dolendo, R. B., & Parcasio, I. G. (2020). Motivation toward teaching and employment profile of the Bachelor of Secondary Education graduates of Benguet State University. Mountain Journal of Science and Interdisciplinary Research, 80(2), 72–90.
3. Bual, C. L. C., & Bual, R. C. (2024). Development of manufacturing engineering program of Bulacan State University using employability tracer study. International Journal of Evaluation and Research in Education (IJERE), 13(3), 1970–1978.
4. Wulandari M., et al. (2022). Tracer Study of Alumni Competencies in Civil Engineering Department Universitas Negeri Surabaraya. In Proceedings of the International Conference on Engineering Pedagogy, Social Sciences, and Economics (pp. 123-135).
5. Guetterman, T. C. (2019). Basics of statistics for primary care research. Family Medicine and Community Health, 7(2), e000067.
6. Hazaymeh, E. N. M., & Dela Peña, M. K. (2017). A Tracer Study of La Salle University College of Engineering Graduates.
7. Odede, O. S., Adeyemi, T. A., Kolawole, O., Oladimeji, R. S., & Adeniyi, O. (2021). Employment Outcomes of Technical Education Graduates: A Tracer Study. International Journal of Research and Practice in Education, 1(1), 10-20.
8. Pontillas, V. V. (2018). Tracer study on Bachelor of Science in Electrical Engineering graduates of a polytechnic college in the Philippines from 2007 to 2010. Asia Pacific Journal of Multidisciplinary Research, 6(2), 36–46.
9. Riyanti, R., Reski, I. A., & Arif, R. M. (2022). Employment Outcomes of Civil Engineering Graduates: A Tracer Study. Konfrontasi: Jurnal Multidisiplin Ilmu Komunikasi, 9(1), 45-58.
10. Sicadsicad, J. P., Ledesma, D. L., Belongilot, G. R., Zafico, L., & Escuña, J.-A. (2022). Tracer study on the employability of Bachelor of Science in Civil Engineering graduates of the University of Cebu-Main from 2010 to 2017. International Research Journal of Advanced Engineering and Science, 7(3), 202–205.
11. Sueno, H. T., & Balala, B. M. (2022). Employment Outcomes of Bachelor of Computer Science (BSCS) Graduates: A Tracer Study. EPH - International Journal of Humanities and Social Science, 8(8), 123-135